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and the vertical angle to increase, the volume being constant. Show that the angular velocity is proportional to the altitude.

442. *By Prof. Casey.*— $ABN$  is a given circle,  $D$ ,  $F$  and  $O$  are given points in the same plane. It is required to describe a circle passing through  $D$  and  $F$  and intersecting the given circle in the points  $G$ ,  $H$ , so that the triangle  $GOH$  may be of a given magnitude.

443. *By O. H. Merrill.*—In cutting the maximum rectangular parallel-pipedon from a frustum of a cone, five pieces are cut off. Find the volume of each of these pieces.

444. *Selected by Prof. H. T. Eddy.*—Given the five equations,

$$\begin{aligned}x_1^2 + x_2^2 + x_3^2 &= 3\beta^2, \\y_1^2 + y_2^2 + y_3^2 &= 3\alpha^2, \\x_1y_1 + x_2y_2 + x_3y_3 &= 0, \\x_1 + x_2 + x_3 &= 0, \\y_1 + y_2 + y_3 &= 0.\end{aligned}$$

Eliminate  $x_2y_2$   $x_3y_3$ , and show that

$$\alpha^2x_1^2 + \beta^2y_1^2 = 2\alpha^2\beta^2.$$

(Routh's Dynamics, 4th Edition, Article 38.)

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#### PUBLICATIONS RECEIVED.

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*Annual Report of the Chief Signal Officer to the Secretary of War for the fiscal year ending June 30, 1881.* 8vo. 981 pages, with 69 maps. Washington: 1881.

*Transactions of the Wisconsin Academy of Science, Arts, and Letters.* Vol. V. 1877-1881. Madison, Wisconsin. 1882.

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#### ERRATA.

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On page 169, line 21 (Vol. VI), in the exponent of  $e$ , for  $w$  read  $\omega$ .

" " 138, line 13 from bottom (Vol. IX), for  $b^3$ , read  $b_3$ .

" " 85, lines 10, 11, 12, 14 and 15, read for exponents of  $x$  in the last eq'n of the several lines, respectively, 2, 3,  $n$ , 2,  $n$ .

" " 95, " 6, 8, and 10, divide each fraction before  $f$  by 2.

" " " , line 7, insert  $y$  before  $dy$ .

" " " , " 10, for  $512r^2 \div 525\pi$ , read  $256r^2 \div 525\pi$ .

" " 102, " 3, for  $y_3$ , read  $y^3$ .

" " 115, " 23, for  $(2-2m)$ , read  $(2+2m)$ .

" " 116, " 4, for  $= \infty$ , read  $= -\infty$ .

" " 118, " 15 from bottom, for  $\frac{3}{2}a$ , read  $\frac{3}{2}a^3$ .

" " 119, at head of Table III, for  $-px$ , read  $+px$ .